SENSIBLE SOLUTIONS

CES INC

DRAFT MASTER PLAN
FOR THE
TOWN OF BAR HARBOR
SOLID WASTE AND RECYCLING FACILITIES

Prepared for: **Town of Bar Harbor, Maine**
Attn: Chip Reeves, Director of Public Works
50 Public Works Way
Bar Harbor, ME 04609
207.288.4681

NOVEMBER 2014
JN: 10156.002

Report Prepared By:
CES, Inc.
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Engineers ◆ Environmental Scientists ◆ Surveyors

November 26, 2104

Mr. Charles ("Chip") Reeves, Director of Public Works
Town of Bar Harbor
50 Public Works Way
Bar Harbor, ME 04609
pwdirector@barharbormaine.gov
207-288-4681

Re: Draft Master Plan for the Town of Bar Harbor Solid Waste and Recycling Facilities

Dear Mr. Reeves:

In accordance with our *Proposal to Prepare Updated Master Plan for the Town of Bar Harbor Solid Waste and Recycling Facilities*, dated September 16, 2014, CES, Inc. (CES) is submitting this draft Master Plan for your review. This draft Master Plan identifies proposed upgrades to the Town of Bar Harbor's (Town) solid waste transfer station and recycling facility. The upgrades identified are based on our inspection of the facilities and input from you and Ron Graves (Solid Waste Coordinator). We feel that the proposed upgrades will provide added convenience for patrons and Town employees utilizing these facilities.

As outlined in our proposal, the goal of updating the Master Plan is to identify budget estimates and proposed schedules to be included in the Town's Capital Investment Plan (CIP) in order to address necessary facility improvements:

1) that comply with existing and proposed solid waste management laws and regulations;
2) that are consistent with the Town's Comprehensive Plan;
3) that are cost-effective and allow efficient operation of the Town's solid waste and recycling facilities;
4) that address existing challenges to operation (e.g., litter and vector control); and
5) that are consistent with MRC's regional post-2018 solid waste management approach.

In support of this draft Master Plan, and in accordance with our proposal, CES met with Town personnel to inspect the existing solid waste transfer station and recycling facilities. This inspection provided us with an overall understanding of how these facilities currently operate and helped to identity potential areas for improvements. Following the inspection, the Town also provided CES with copies of the existing solid waste transfer station license issued by the Maine Department of Environmental Protection (MDEP), the Operation and Maintenance (O&M) Manual, and the most recent site survey.

Based on our meeting and the subsequent information provided by Town officials and our evaluation of the existing transfer station and recycling facilities, we prepared several preliminary options for improvement to the facility. We then had a second meeting with you and Ron Graves to go over each of the preliminary options to identify any facility specific issues and

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come to a decision on the most practical and feasible option for the Town. With assistance from you and Ron and based on our understanding of the transfer station and recycling facility operations, below you will find the **Results of Findings** and our **Recommendations for Improvements and Upgrades**. Additionally, **Appendix A** provides an Existing Site Sketch and Conceptual Site Sketch for the recommended facility upgrades and **Appendix B** provides a Draft Most Probable Cost Breakdown for the recommended improvements.

RESULTS OF FINDINGS

Solid Waste Transfer Station

The Town of Bar Harbor's solid waste transfer station and recycling facility is located on approximately 2.6 acres on White Spruce Road in Bar Harbor, Maine. White Spruce Road is a public way that separates the solid waste transfer station to the east and the recycling facility to the west.

The solid waste transfer station was built in the 1970s to serve commercial and residential users of the Town. The site is located outdoors and graded such that patrons dump waste from above through a hopper and into live floor transport trailers below. Under the current configuration, the area where patrons unload waste into the transport trailers allows for only one vehicle at a time to unload waste. During busy times, traffic congestion within the unloading area is often problematic. Based on information provided by Town officials, two trailers per day during summer months and one trailer per day during winter months are filled at the transfer station. The Town keeps two transport trailers on-site at all times and rotates between full and empty as necessary.

Based on the current configuration, this method of disposal does not allow for efficient compaction of waste within the transport trailers, although some compaction of waste is achieved with a backhoe. Additionally, because the transport trailers are exposed, additional load weights are expected during precipitation events. Town officials also report that birds present a nuisance at the site and numerous odor complaints are received each year.

Recycling Facility

The Town of Bar Harbor also provides recycling opportunities for commercial and residential users within the Town. The recycling facility is located adjacent to the solid waste transfer station to the west and across Spruce Street.

The current configuration of the recycling facility includes a recycling drop off building for patrons, a separate recycling processing and storage building, as well as a separate universal waste drop off building, and a white goods/metals drop off pad. According to Town officials the white goods/metals pad will be relocated to a different location within the Town of Bar Harbor. Under the current configuration, Town employees must cross the user traffic flow to obtain full recycle bins from the drop off building and transport them to the processing and storage building by use of a fork lift. During times of high recycling traffic, this process interrupts traffic flow and becomes a safety concern.

After recyclables are processed, bales are stored in one of three storage trailers located behind the recycle processing and storage building. Often times, when storage trailers are full, outside storage of processed recyclables is necessary. Processed material is transferred from the full storage trailers or from the outside storage area into transport trailers for shipment off site.

Transport trailers can either be loaded from the north or from the east loading dock. Loading from the north dock interrupts traffic flow for users dropping off recyclables and loading from the east dock interrupts traffic flow for users of Spruce Street and users of the solid waste transfer station.

Currently, the recycle processing and storage building has an approximate 30 foot by 60 foot space that is being utilized for miscellaneous material storage. Based on our meeting with Town officials, this area could be utilized for recycling operations.

RECOMMENDATIONS FOR IMPROVEMENTS AND UPGRADES

Solid Waste Transfer Station

Based on our evaluation and input from Town officials, CES recommends constructing a new 60x68 foot transfer station building at the existing location. Constructing the new building at the existing location will allow the Town to utilize existing infrastructure currently in place and thereby reduce the overall cost to construct such a facility. The intent of the new building will be to allow patrons to dispose waste into the top of the transfer trailer (which will be located below), as is done now, however the facility will be constructed such that the entire transfer trailer can be utilized for disposal. This configuration will allow for either four residential, or two residential and one commercial, vehicles at a time to unload waste. This will help to improve traffic flow into and out of the transfer station and will reduce traffic congestion during busy times. This configuration will eliminate precipitation from being mixed with MSW and reduce the overall weight of the transport trailers being hauled off to PERC. As part of the building upgrades, a hydraulic knuckle boom will be installed adjacent to the transport trailer. The knuckle boom will be operated from inside the building and can be utilized to spread and compact waste. Similar facilities utilizing this configuration can accomplish an average of 22 to 24 tons of waste per trailer load. Additionally, a facility of this configuration will minimize bird nuisances and will provide an opportunity to better control odors emanating from the facility. Odor control can be accomplished by either venting inside air through a filter system or by vapor misting air leaving the building. The proposed transfer building will also have an office for Town personnel which will contain the controls to operate the knuckle boom. Because the Town has two transfer trailers on site at one time, one empty and one being filled, the empty trailer will also be stored within the building. This configuration will also allow the Town to separate stormwater flow and prevent mixing of stormwater with leachate that is often expelled from the transfer trailers. Leachate expelled from the transfer trailers and where patrons dispose waste will be collected through a collection system that will be tied into the Town's waste water collection system and can be treated at the waste water treatment plant. **Appendix D** provides photos of a similar transfer station configuration.

In order to accomplish this configuration and allow sufficient turning radius for trailers being hauled off site, as well as moving them around the site, site work will be necessary. The site work will include removing trees, regarding and paving approximately 3,000 square feet to the south of the proposed facility. Additionally, the overhead electric utilities will need to be reconfigured to allow for construction of the building. CES proposes to install a new transformer just to the north of the proposed new building and run the electric lines underground to provide the necessary power to the transfer station as well as the recycling building.

Appendix A provides an Existing Site Sketch and a Conceptual Sketch of the transfer station improvements discussed above and **Appendix B** provides a probable cost estimate for these upgrades.

The cost estimates provided for solid waste transfer station upgrades anticipates utilizing existing infrastructure to the maximum extent practical.

Recycling Facility

Based on our evaluation and input from Town officials, to address issues at the recycling facility related to Town employees interfering with traffic flow of normal recycling drop off patrons, CES recommends removing the old recycling drop-off building and constructing a 40x80 foot addition to the existing recycling processing building. The addition will be located behind and to the west of the existing processing building and will provide a new user drop off area which will be visible from the recycle processing building. The addition will also provide cold storage of processed recyclables and will be constructed such that the existing cold storage will be accessible from the new addition. The new addition will accommodate commercial cardboard drop off which typically occurs in packer trucks. Cardboard can be offloaded onto the floor and then moved into the recycle processing building for bailing. Processed recyclables will be loaded onto transport trailers via the existing loading dock located on the north end of the existing recycle processing building.

In order to provide sufficient maneuver room for transfer trailers accessing the site, CES recommends clearing, grading and paving approximately 3,000 square feet to the north of the recycle processing building. We understand that metals currently stored in this area will be removed off site to a different location. This configuration will allow transfer trailers to be loaded without interrupting normal user traffic flow patterns. A small interruption may occur when trailers are accessing and/or leaving the site.

To provide overall traffic flow improvements, access into and out of the facility will be “one way”. To accomplish this, users will access via the most northerly portion of the site, will proceed south around the transport trailer loading area, and proceed to the new recycle drop off area. A by-pass lane around the recycling drop-off area is also recommended to help prevent traffic congestion in this area. A small parking area is provided west of drop-off area for convenience. After dropping off recyclables, patrons will proceed south around the cold storage addition and back to Spruce Street. From there, they can either turn left and leave the facility or continue straight to the MSW disposal area. To provide continuous one way traffic flow, a small section of the existing cold storage building will need to be demolished to allow traffic to exit onto Spruce Street or to continue to the MSW transfer station. Approximately 3,200 square feet of trees will need to be removed behind the existing cold storage building as well as grading and paving the new area to allow continuous “one way” traffic flow back to Spruce Street.

Appendix A provides a Conceptual Sketch showing the upgrades to the recycling facility and **Appendix B** includes the Most Probable Cost Breakdown.

Site Improvements

As noted above, several site improvements will be necessary to accommodate the transfer station and recycling facility upgrades. In general, these improvements include site grading and excavation, paving, loaming and seed, decommission overhead utilities, and provide for underground electrical utilities. CES has provided a Most Probable Cost Breakdown of each of

the probable improvements. As noted, the Most Probable Cost Breakdown is included in **Appendix B**. Note that any remediation that may be required pertaining to buried materials due to the old incinerator has not been included.

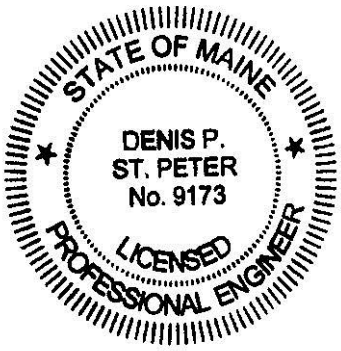
Should you have questions or require further information, please do not hesitate to contact us.

Sincerely,
CES, Inc.

Jeff Strang
Project Engineer-Solid Waste

Chris Snowdeal EI
Project Engineer-Structural

Denis St. Peter, P.E.
Project Manager



JS/CWS/DSP/gdr
Enc.

APPENDIX A

EXISTING SITE SKETCH
AND
CONCEPTUAL SKETCHES

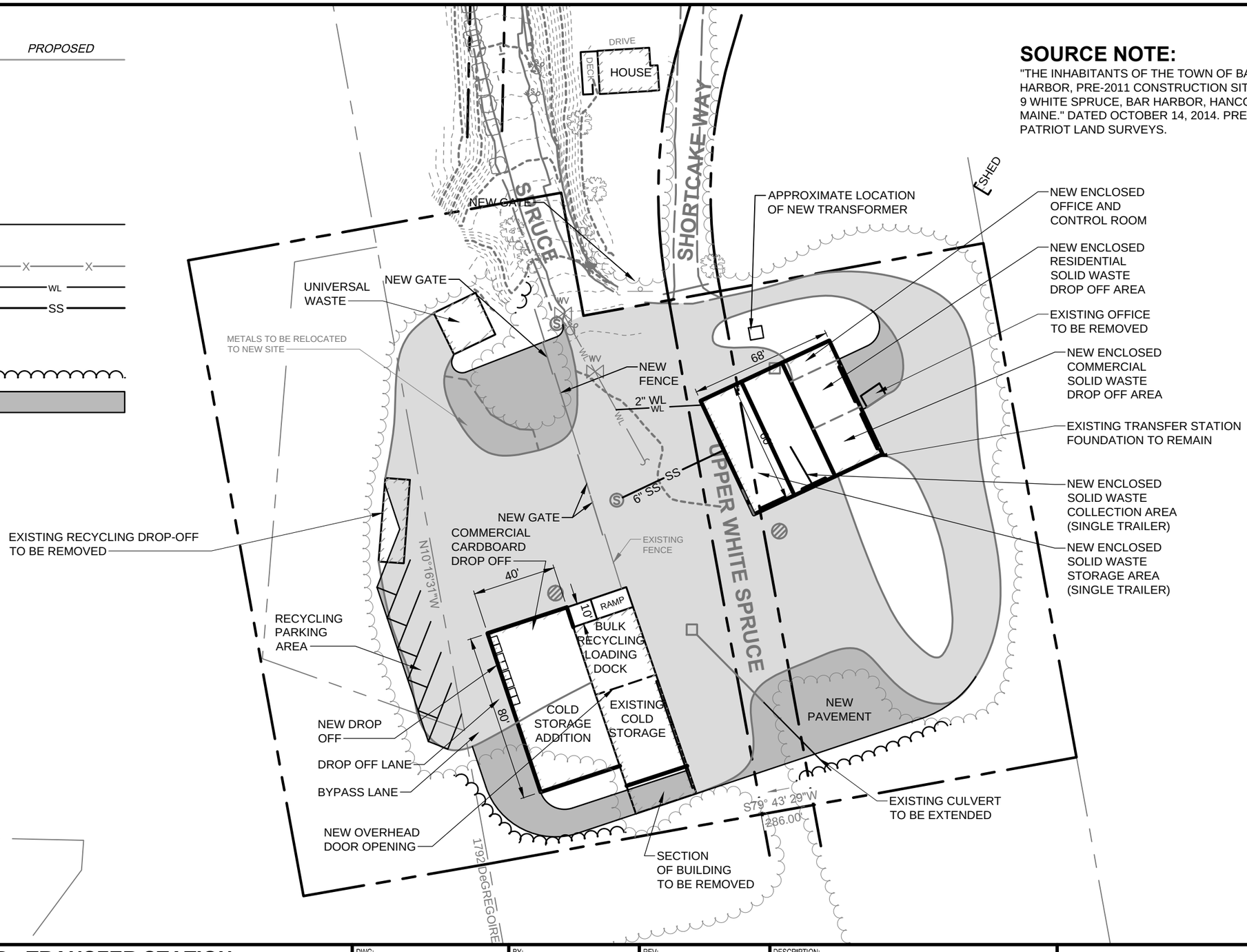
PROJECT TITLE: **TOWN OF BAR HARBOR - TRANSFER STATION BAR HARBOR, MAINE**	DWG: **V-101**	BY: BTH/CWS	REV:	DESCRIPTION:	CES INC Engineers • Environmental Scientists • Surveyors
		DATE: 10/20/2014	REV DATE:		
SHEET TITLE: **EXISTING SITE SKETCH**	JN: 10156.002	APPROVED BY:	ISSUE:	DESCRIPTION:	
	SCALE: 1" = 50'	CHECKED BY:	ISSUE DATE:		

LEGEND:

DESCRIPTION	EXISTING	PROPOSED
SEWER MANHOLE	S	
UTILITY POLE		
CATCH BASIN		
WATER SHUT OFF	WSO	
WATER VALVE	WV	
PROPERTY LINE		
OVERHEAD UTILITY LINE	OHU	
EDGE OF PAVEMENT		
EDGE OF GRAVEL		
FENCE	X X	X X
WATERLINE	WL	WL
SANITARY SEWER	SS	SS
MINOR FOOT CONTOUR	98	
MAJOR FOOT CONTOUR	100	
TREELINE		
PAVEMENT		

SOURCE NOTE:

"THE INHABITANTS OF THE TOWN OF BAR HARBOR, PRE-2011 CONSTRUCTION SITE PLAN, 9 WHITE SPRUCE, BAR HARBOR, HANCOCK, MAINE." DATED OCTOBER 14, 2014. PREPARED BY PATRIOT LAND SURVEYS.



PROJECT TITLE: **TOWN OF BAR HARBOR - TRANSFER STATION BAR HARBOR, MAINE**	DWG: **C101**	BY: BTH/CWS	REV:	DESCRIPTION:	CES INC Engineers • Environmental Scientists • Surveyors
		DATE: 11/24/2014	REV DATE:		
SHEET TITLE: **MASTER PLAN CONCEPTUAL SKETCH**	JN: 10156.002	APPROVED BY:	ISSUE:	DESCRIPTION:	
	SCALE: 1" = 50'	CHECKED BY:	ISSUE DATE:		

APPENDIX B

DRAFT MOST PROBABLE COST BREAKDOWN

THE TOWN OF BAR HARBOR
TRANSFER AND RECYCLING FACILITY
MASTER PLAN - IMPROVEMENTS
Draft Most Probable Cost Breakdown

November 24, 2014

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
TRANSFER STATION IMPROVEMENTS				***$ 638,400.00***
New Concrete Foundation	226	LF	$ 300.00	$ 67,800.00
New Knuckle Boom Compactor Foundation	1	EA	$ 10,000.00	$ 10,000.00
New Pre-Engineered Building Shell	4080	SF	$ 75.00	$ 306,000.00
New Concrete Slab	4080	SF	$ 8.00	$ 32,640.00
New Knuckle Boom Compactor/Controls	1	EA	$ 100,000.00	$ 100,000.00
New Overhead Doors	4	EA	$ 8,000.00	$ 32,000.00
New Trench Drain System	4	EA	$ 2,500.00	$ 10,000.00
New Hose Bib	4	EA	$ 250.00	$ 1,000.00
New Lighting and Power	4080	SF	$ 12.00	$ 48,960.00
Odor Control Biofilter or Mist	1	EA	$ 30,000.00	$ 30,000.00
RECYCLING BUILDING IMPROVEMENT				***$ 373,000.00***
Demo Existing Recycling Drop-Off Building	600	SF	$ 5.00	$ 3,000.00
New Concrete Foundation	175	LF	$ 100.00	$ 17,500.00
New Concrete Slab	3200	SF	$ 5.00	$ 16,000.00
New Superstructure	3200	SF	$ 75.00	$ 240,000.00
New Overhead Doors	4	EA	$ 6,000.00	$ 24,000.00
New Concrete Ramp to Existing Recycling Process Area	1	EA	$ 8,500.00	$ 8,500.00
New Siding on Existing Recycling Building	1700	SF	$ 8.00	$ 13,600.00
New Boiler System	1	EA	$ 12,000.00	$ 12,000.00
New Lighting and Power	3200	SF	$ 12.00	$ 38,400.00
SITE IMPROVEMENTS				***$ 417,740.00***
Site Preparation, Temporary Erosion Control	1.5	Acre	$ 2,000.00	$ 3,000.00
Common Excavation	4,500	CY	$ 10.00	$ 45,000.00
Geotextile	5,300	SY	$ 2.00	$ 10,600.00
18" Gravel Subbase	2,700	CY	$ 25.00	$ 67,500.00
6" Gravel Base	1,100	CY	$ 28.00	$ 30,800.00
4" Pavement	5,300	SY	$ 23.00	$ 121,900.00
2" Water Line	60	LF	$ 50.00	$ 3,000.00
6" Sewer Line	60	LF	$ 50.00	$ 3,000.00
New Fence	70	LF	$ 35.00	$ 2,450.00
New 50' (2 Piece Sliding Gate)	1	EA	$ 5,000.00	$ 5,000.00
New 20' (2 Piece Swinging Gate)	1	EA	$ 1,500.00	$ 1,500.00
Culvert Extension	28	LF	$ 60.00	$ 1,680.00
Striping and Marking	1	LS	$ 2,000.00	$ 2,000.00
Loam, Seed and Mulch	6	UNIT	$ 35.00	$ 210.00
Decommission Overhead Utilities	1	LS	$ 5,000.00	$ 5,000.00
Pad Mounted Transformer: 150 kVA , 480 Volt, 3 Phase	1	EA	$ 14,500.00	$ 14,500.00
Concrete Pad: 10' x 10'	100	SF	$ 6.00	$ 600.00
Underground Electrical Utilities	500	LF	$ 200.00	$ 100,000.00
CONSTRUCTION SUBTOTAL				***$ 1,429,140.00***
GENERAL CONDITIONS				***$ 643,113.00***
General Conditions	5%	%	$1,429,140.00	$ 71,457.00
Contingency	20%	%	$1,429,140.00	$ 285,828.00
Engineering/Permitting	10%	%	$1,429,140.00	$ 142,914.00
Construction Quality Assurance	10%	%	$1,429,140.00	$ 142,914.00
PROJECT TOTAL				***$ 2,072,253.00***

APPENDIX C

EXISTING TRANFER STATION AND RECYCLING FACILITY PHOTOS

TOWN OF BAR HARBOR
MASTER PLAN
TRANSFER STATION & RECYCLING FACILITY

Photo No. 1

Photo Date:
October 2, 2014

Site Location:
Transfer Station and Recycling Facility

Description:

Photo By:
DSP

Photo No. 2

Photo Date:
October 2, 2014

Site Location:
Transfer Station and Recycling Facility

Description:

Photo By:
DSP

Photo No. 3

Photo Date:
October 2, 2014

Site Location:
Transfer Station and Recycling Facility

Description:

Photo By:
DSP

Photo No. 4

Photo Date:
October 2, 2014

Site Location:
Transfer Station and Recycling Facility

Description:

Photo By:
DSP

TOWN OF BAR HARBOR
MASTER PLAN
TRANSFER STATION & RECYCLING FACILITY

Photo No. 1

Photo Date:
October 22, 2014

Site Location:
Recycling Facility

Description:
Available Storage

Photo By:
CWS

Photo No. 2

Photo Date:
October 22, 2014

Site Location:
Recycling Facility

Description:
Drop-off area

Photo By:
CWS

Photo No. 3

Photo Date:
October 22, 2014

Site Location:
Recycling Facility

Description:
East loading dock

Photo By:
CWS

Photo No. 4

Photo Date:
October 22, 2014

Site Location:
Recycling Facility

Description:
Forklift Ramp

Photo By:
CWS

Photo No. 5

Photo Date:
October 22, 2014

Site Location:
Recycling Facility

Description:
North loading dock

Photo By:
CWS

APPENDIX D

SIMILAR TRANFER STATION FACILITY PHOTOS

CES INC

TOWN OF BAR HARBOR
MASTER PLAN
TRANSFER STATION & RECYCLING FACILITY

Photo No. 1

Photo Date:
October 30, 2014

Site Location:
Similar Facility
MMSWF Transfer Facility
Corinna, Maine

Description:
Knuckle Boom Controls

Photo By:
JMC

Photo No. 2

Photo Date:
October 30, 2014

Site Location:
Similar Facility
MMSWF Transfer Facility
Corinna, Maine

Description:
Knuckle Boom

Photo By:
JMC

Photo No. 3

Photo Date:
October 30, 2014

Site Location:
Similar Facility
MMSWF Transfer Facility
Corinna, Maine

Description:
Transfer Station Access

Photo By:
JMC

Photo No. 4

Photo Date:
October 30, 2014

Site Location:
Similar Facility
MMSWF Transfer Facility
Corinna, Maine

Description:
Transfer Station Building

Photo By:
JMC

Photo No. 5

Photo Date:
October 30, 2014

Site Location:
Similar Facility
MMSWF Transfer Facility
Corinna, Maine

Description:
Transfer Station Containment Trailer

Photo By:
JMC

Photo No. 6

Photo Date:
October 30, 2014

Site Location:
Similar Facility
MMSWF Transfer Facility
Corinna, Maine

Description:
Transfer Station Office

Photo By:
JMC

Photo No. 7

Photo Date:
October 30, 2014

Site Location:
Similar Facility
MMSWF Transfer Facility
Corinna, Maine

Description:
Transfer Station Unloading

Photo By:
JMC